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POST-COVID DERMATITIS IN MILITARY PERSONNEL: CLINICAL-IMMUNOLOGICAL INDICATORS AND PREVENTION

Literature review

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Abstract: This article is dedicated to the study of post-COVID dermatitis in military personnel, with a focus on clinical-immunological indicators and preventive measures. The study addresses the primary symptoms of dermatological manifestations resulting from a previous COVID-19 infection, including skin rashes, inflammation, and itching, as well as immunological changes such as alterations in cytokine and antibody levels. Special attention is given to the analysis of risk factors such as stress, exposure to physical and climatic conditions, and the immune response peculiarities in military personnel that may exacerbate the development of skin diseases after infection. Recommendations for preventing post-COVID dermatitis are provided, including the use of specialized dermatological products, immune system support, psychological recovery, as well as the importance of early diagnosis and timely treatment.

Keywords: post-COVID dermatitis, military personnel, COVID-19, SARS-CoV-2, CD3+, CD4+, CD8+, NK cells.

Introduction

The COVID-19 pandemic has demonstrated a wide range of long-term consequences that can develop in recovered patients, including dermatological complications [1,6,8]. One such complication is post-COVID dermatitis, which occurs in 10-20% of patients after the infection. Military personnel, who are constantly under stress, engage in high physical activity, and are exposed to specific climatic conditions, are particularly at risk. Post-COVID dermatitis can deteriorate the quality of life of military personnel and reduce their combat readiness [3,11,13]. Therefore, it is important to examine in greater detail the clinical-immunological characteristics of this condition and develop effective methods of prevention and treatment [2,9,13].

Clinical Manifestations of Post-COVID Dermatitis in Military Personnel

Post-COVID dermatitis in military personnel manifests as various skin rashes, such as erythematous-scaly lesions, papular and vesicular rashes, as well as exacerbations of chronic dermatoses like eczema, psoriasis, and atopic dermatitis [5,7,12]. In some cases, alopecia and skin pigmentation disorders are observed. These manifestations can occur at any time after the infection, which is related to prolonged inflammation and immune imbalance following SARS-CoV-2 infection. In military personnel, who are under constant stress and physical overload, such dermatological manifestations can be particularly pronounced and lead to a significant reduction in quality of life [4,6,9].

Immunological and Pathophysiological Mechanisms of Post-COVID Dermatitis

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One of the key factors contributing to the development of post-COVID dermatitis is the hyperactivation of the immune system [3,6,12]. COVID-19 induces the overproduction of pro-inflammatory cytokines such as IL-6, IL-1β, and TNF-α. These substances continue to affect the body even after clinical recovery, leading to chronic inflammation of the skin and activating autoimmune reactions. Recovered COVID-19 patients show an imbalance between CD4+ and CD8+ cells, as well as a decrease in the number of T-helper cells (CD4+) [3,5,8]. These changes create conditions for the activation of autoimmune reactions, including those directed against the skin [7,12,14].

Immunological Markers for Diagnosis and Prognosis

For accurate diagnosis and prognosis of post-COVID dermatitis, both clinical and immunological markers must be considered. Clinical indicators include the nature of the rashes, the area affected, the intensity of itching, as well as the presence or absence of exacerbations of chronic dermatoses. Immunological markers include levels of CD3+, CD4+, CD8+, NK cells, the CD4/CD8 ratio, and concentrations of IgA, IgM, IgG, and IgE. Biochemical markers such as C-reactive protein (CRP), ferritin, and D-dimer help assess the degree of inflammation and coagulopathy that may accompany dermatological manifestations [1,6,8].

Prevention of Post-COVID Dermatitis in Military Personnel

Military personnel have an increased risk of developing dermatological complications due to both physical and psychological factors. Their work often involves prolonged use of personal protective equipment, which can lead to contact dermatitis and skin maceration. In addition, frequent use of antiseptics, stress, and overexertion can exacerbate inflammatory processes and trigger flare-ups of chronic dermatoses [3,6,9].

1. Pharmacological Prevention
- The prescription of immunomodulators (e.g., polyoxidonium, thymogen) and antioxidants (vitamins A, E, C).
- The use of vitamin D in preventive doses, which helps regulate the immune response and reduce inflammation.
- The additional intake of micronutrients such as zinc, selenium, and magnesium to enhance immune protection.

2. Non-Pharmacological Measures
- Correction of physical load regimes, with a gradual return to active duty after recovery from infection.
- Normalization of sleep and nutrition to improve overall health.
- Psychological support and the use of relaxation techniques to relieve emotional stress [3,6].

3. Local Prevention of Dermatitis
- The use of barrier creams for the skin, especially when in contact with antiseptics and personal protective equipment.
- Application of anti-inflammatory ointments at the first signs of skin irritation [5,16].

Conclusion

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Post-COVID dermatitis is an important issue, especially among military personnel, and requires a comprehensive approach to diagnosis and prevention. Immunological and clinical markers play a key role in predicting and managing this condition. Effective prevention includes both pharmacological measures and adjustments to physical activity, nutrition, and emotional well-being. Timely diagnosis and comprehensive treatment can significantly reduce the risk of dermatological complications and improve the quality of life of military personnel.

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